AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A process for production of a microporous affinity membrane having regioselective affinity for compounds in blood or other biologically active fluids to be removed during purification of blood or said biologically active fluids, comprising

subjecting a microporous affinity membrane substrate having a blood side and a filtrate side to one or more cycles of plasma ignition in the presence of a gas mixture ~~comprising at least one functional group~~ comprising at least one modifying gas,

wherein the modifying gas comprises at least one functional group,

and wherein the at least one functional group is regioselectively bound to pore surfaces of the microporous affinity membrane substrate.

2. (Previously Presented) The process according to claim 1, wherein the microporous affinity membrane substrate is a microporous hollow fibre membrane substrate.

3. (Previously Presented) The process according to claim 1, wherein the microporous affinity membrane substrate is a microporous flat sheet membrane substrate.

4. (Previously Presented) The process according to claim 1, wherein ligands having affinity for the compounds in blood or other biologically active fluids are bound to the at least one functional group.

5. (Previously Presented) The process according to claim 1, wherein the at least one functional group is regioselectively bound to surfaces on the filtrate side of the microporous affinity membrane substrate.

6. (Previously Presented) The process according to claim 4, wherein the ligands are proteins, peptides, amino acids, carboxylic acids, nucleotides, oligonucleotides, antigens, antibodies, or mixtures of two or more thereof.

7. (Currently Amended) The process according to claim 1, wherein the at least one functional group ~~comprising at least one modifying gas~~ comprises an amino, aldehyde, ester, epoxy, hydroxy ~~hydroxi acid~~, or sulfonic acid.

8. (Currently Amended) The process according to claim 7, wherein the ~~at least one functional group comprising~~ at least one modifying gas is diaminocyclohexane (DACH) or diethylenetriamine (DETA).

9. (Previously Presented) The process according to claim 1, wherein the gas mixture also comprises at least one carrier gas.

10. (Previously Presented) The process according to claim 9, wherein the at least one carrier gas is chemically inert during the process.

11. (Previously Presented) The process according to claim 1, wherein the plasma ignition results in a gas plasma mixture with a flow rate of 0.1-200 sccm/min.

12. (Currently Amended) The process according to claim 9, wherein the proportion between the ~~at least one functional group comprising~~ at least one modifying gas and the at least one carrier gas is 1:100 to 1:1.

13. (Previously Presented) The process according to claim 1, wherein up to 10 cycles of plasma ignitions are performed.

14. (Previously Presented) The process according to claim 2, wherein the micro-porous hollow fibre membrane substrate is enclosed in a housing or a casing throughout the process.

15. (Previously Presented) The process according to claim 2, wherein the plasma ignition results in a gas plasma mixture flowing axially along the outer or inner surface of the microporous hollow fibre membrane substrate.

16. (Previously Presented) The process according to claim 2, wherein the microporous hollow fibre membrane substrate is made up of a mixture of

polyethylenesulfide and polyvinylpyrrolidone having an inner diameter of 200-1000 μm, a wall thickness of 20-200 μm, a pore diameter of 0.1-0.8 μm, and is assembled in modules each having 1 hollow fibre or assembled in bundles or modules of more than 1000 fibres.

17. (Previously Presented) The process according to claim 2, wherein the ignition frequency during the plasma ignition is 1 kHz – 13.56 MHz or multiples of 13.56 mHz or microwave frequency, the power is 0.5-20 W, the voltage of the electrodes is 50-500 volts, the pressure is 0.01-10 mbar, the flow rate is 0.1-200 sccm/min, and the gas plasma mixture flow period is up to 20 min.

18. (Previously Presented) The process according to claim 14, wherein the gas mixture is added to the housing or casing space surrounding the outer surface of the microporous hollow fibre membrane substrate in a diffusion controlled way at a pressure of 0.01-50 mbar.

19. (Previously Presented) The process according to claim 14, wherein the gas mixture is added to the housing or casing space surrounding the outer surface of the microporous hollow fibre membrane substrate in a laminar flow or convection controlled way at a pressure of 50 mbar–1.1 bar.

20. (Previously Presented) The process according to claim 2, wherein the gas mixture is added to the lumen of the microporous hollow fibre membrane substrate in a laminar or convection controlled way at a pressure of 0.01-50 mbar.

21. (Previously Presented) The process according to claim 14, wherein the gas mixture is added to the lumen of the microporous hollow fibre membrane substrate in a diffusion controlled way at a pressure of 50 mbar-1.1 bar, and wherein the housing space surrounding the outer surface of the microporous hollow fibre membrane substrate is filled with a blocking fluid.

22. (Previously Presented) The process according to claim 3, wherein the microporous flat sheet membrane substrate throughout the process is enclosed in a housing or casing having a first and a second compartment separated from each other by said membrane substrate, wherein the surface on the filtrate side of said membrane substrate is facing the first compartment and the surface of the blood side is facing the second compartment, and wherein the gas mixture is added to said first compartment and the functional groups during the plasma ignition in the presence of the gas mixture are bound to pore surfaces and the surface on the filtrate side of the microporous flat sheet membrane substrate.

23. (Previously Presented) The process according to claim 22, wherein the plasma ignition results in a gas plasma mixture with a flow rate of 1-100 sccm/min.

24. (Previously Presented) The process according to claim 3, wherein the microporous flat sheet membrane substrate is made up of a mixture of polyethersulfone and polyvinylpyrrolidone having a wall thickness of 20-200 μm.

25. (Previously Presented) The process according to claim 3, wherein the ignition frequency during the plasma ignition is 1 kHz – 13.56 MHz or multiples of 13.56 mHz or microwave, the power is 1-20 W, the voltage of the electrodes is 50-300 volts, the pressure is 0.1-5 mbar, the flow rate is 1-100 sccm/min, and the gas plasma mixture flow period is up to 30 min.

26. (Previously Presented) The process according to claim 22, wherein excessive gas is evacuated from the housing or casing spaces after the plasma ignition.

27. (Previously Presented) A microporous affinity membrane produced according to claim 1, wherein said microporous affinity membrane comprises at least one functional group, bound only to pore surfaces of the microporous affinity membrane.

28. (Previously Presented) The microporous affinity membrane according to claim 27, wherein the at least one functional group comprises an amino group.

29. (Previously Presented) The microporous affinity membrane according to claim 27, wherein the at least one functional group is bound to the filtrate side.

30. (Previously Presented) The microporous affinity membrane according to claim 27, wherein ligands having specificity for the components in blood or other biologically active fluids to be removed are bound to the functional groups.

31. (Previously Presented) The microporous affinity membrane according to claim 27, wherein the microporous affinity membrane is a microporous hollow fibre membrane or a microporous flat sheet membrane.

32. (Previously Presented) A microporous affinity membrane according to claim 30, wherein the ligands are proteins, peptides, amino acids, carboxylic acids, nucleotides, oligonucleotides, antigens, antibodies, or mixtures of two or more thereof.

33. (Previously Presented) An adsorption device comprising the microporous affinity membrane according to claim 27.

34-37. (Canceled)

38. (Currently Amended) The process according to claim 1, wherein the at least one functional group ~~comprising at least one modifying gas~~ comprises an amino group.

39. (Previously Presented) The process according to claim 9, wherein the at least one carrier gas comprises helium, nitrogen, hydrogen, argon, or a mixture of two or more thereof.

40. (Currently Amended) The process according to claim 9, wherein the proportion between the ~~at least one functional group comprising~~ at least one modifying gas and the at least one carrier gas is 1:4.

41. (Previously Presented) The process according to claim 14, wherein the housing or casing is concentric.

42. (Previously Presented) The process according to claim 2, wherein the microporous hollow fibre membrane substrate is made up of a mixture of polyethylenesulfide and polyvinylpyrrolidone having an inner diameter of about 330 μm, a wall thickness of about 110 μm, a pore diameter of about 0.4 μm, and is assembled in modules each having 1 hollow fibre or assembled in bundles or modules of more than 1000 fibres.

43. (Previously Presented) The process according to claim 2, wherein the microporous hollow fibre membrane substrate is assembled in bundles or modules of up to 1000 fibres.

44. (Previously Presented) The process according to claim 23, wherein the flow rate is about 10 sccm/min.

45. (Previously Presented) The process according to claim 24, wherein the microporous flat sheet membrane substrate has a wall thickness of about 110 μm, and a pore diameter of about 0.4 μm.

46. (Previously Presented) The process according to claim 25, wherein the power is about 5 W, the pressure is about 0.3 mbar, the flow rate is 10 sccm/min, and the gas plasma mixture flow period is about 5 min.

47. (Previously Presented) A method of therapeutic apheresis, comprising treating blood or other biologically active fluids with the microporous affinity membrane according to claim 27.

48. (Previously Presented) The method of claim 47, wherein blood constituents are not activated.

49. (Previously Presented) A method of diagnosing the presence of a compound in a material comprising blood or other biologically active fluids, food, or water, comprising detecting the compound in the material with the microporous affinity membrane according to claim 27.

50. (Previously Presented) The method of claim 49, wherein, when detecting the compound in blood or other biologically active fluids, blood constituents are not activated.

51. (Previously Presented) A method of drug development, comprising detecting a potential drug compound in blood or other biologically active fluids with the microporous affinity membrane according to claim 27.

52. (Previously Presented) The method of claim 51, wherein blood constituents are not activated.

53. (Previously Presented) A method of purifying blood or other biologically active fluids, comprising comprising treating the blood or other biologically active fluids with the microporous affinity membrane according to claim 27.

54. (Previously Presented) The method of claim 53, wherein blood constituents are not activated.